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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,487	09/02/2003	Hyung-Soo Kim	1349.1277	2312
21171	7590	03/30/2006	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			PHAM, HAI CHI	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 03/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/652,487

Applicant(s)

KIM, HYUNG-SOO

Examiner

Hai C. Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

FINAL REJECTION

Duplicate Claims Objection

1. Applicant is advised that should claim 18 be found allowable, claim 14 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-6, 8-10, 12-14, 16-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibe (U.S. 6,489,982) in view of McLaughlin et al. (U.S. 4,758,071).

Ishibe discloses a scanning optical system comprising a collimating lens (2) in which a beam emitted from a light source (semiconductor laser 1) is transformed into at least one of a convergent beam and a parallel beam with respect to an optical axis (col.

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5, lines 46-50) and outputted towards a slit (aperture stop 3), the collimating lens having the following characteristics listed in Table 1 (col. 8):

- $R1_{col} = 182.212$ mm (curvature radius of a first surface of the collimating lens opposing the light source)
- $R2_{col} = -20.831$ mm (curvature radius of a second surface of the collimating lens opposing the aperture stop)
- $d3 = 6.00$ mm (center thickness of the collimating lens)
- $f_{col} = 24.636$ mm (focal length from the collimating lens to the light source)

such that the following relationships:

$$R2_{col} / R1_{col} = 182.212 / (-20.831) = -0.114$$

and $d3 / f_{col} = 6.00 / 24.636 = 0.12$

amply satisfy the claimed inequalities.

However, Ishibe is silent regarding the collimator lens being made of one sheet of a spherical surface lens, the collimator lens being made of glass.

McLaughlin et al. discloses a collimator lens (1) used in an optical reading or writing system, the collimator lens being made out of a sheet of a glass (glass plate 10, Figs. 9C-D) wherein either one surface or each of the two surfaces of the lens is processed into a spherical surface having a predetermined radius of curvature and a predetermined thickness (col. 4, lines 10-25), the spherical shape of the collimator lens is preferred over the aspherical shape because an accurate measurement would be required during the process of the latter.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the collimator lens in the device of Ishibe with a lens made out of one sheet of glass and having both surfaces of spherical shape as taught by Mclaughlin et al. The motivation for doing so would have been to provide a collimator lens easy to produce and whose spherical aberration can be reduced at a low cost as suggested by Mclaughlin et al. at col. 1, lines 15-26.

Ishibe further teaches the aperture stop (3) having an elliptic shape with a larger diameter (= 3.08 mm) in the main scanning direction and a shorter diameter (= 1.34 mm) in the sub-scanning direction (Table 1, col. 8, lines 50-52).

Ishibe further teaches the scanning optical system including a cylinder lens (4) in which light beams passing therethrough, are transformed into linear shapes (col. 5, lines 50-58), a rotating polygon mirror (5), an f-theta lens (6), and a photosensitive drum (7).

4. Claims 2, 7, 11, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibe in view of Mclaughlin et al., as applied to claims 1, 5, 9, 13 and 17 above, and further in view of Naiki (U.S. 6,172,787).

Ishibe, as modified by Mclaughlin et al., discloses all the basic limitations of the claimed invention except for the collimator lens having a positive refractive power.

Naiki discloses a laser beam scanning optical apparatus using a collimator lens (2) having a positive refractive power in both main and sub-scanning directions as well as a small diameter and field of view so as to convert the incident diverging laser beam into a parallel beam while inhibiting the spherical aberration (col. 3, lines 38-45).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the collimator lens of Ishibe device as having a positive refractive power as taught by Naiki. The motivation for doing so would have been to convert the incident diverging laser beam into a parallel beam as well as to as to inhibit the spherical aberration as suggested by Naiki.

Response to Arguments

5. Applicant's arguments filed 01/23/06 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, McLaughlin et al. clearly provides a motivation for using a collimating lens made out of a single sheet of glass with reduced spherical aberration for cost effective purpose as compared to the use of a compound lens consisting of plural spherical lenses (see McLaughlin et al. at col. 1, lines 15-26).

The Applicant further argues that "[there] is ample evidence throughout the Ishibe reference to support the Applicant's assertion that the increased cost of the glass

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collimating lens would preclude any motivation to combine Ishibe and Mclaughlin". The Applicant goes on to state that in the discussion in Ishibe, "the plastic lens is used in consideration of cost" with regard to an f- θ lens. However, Ishibe clearly indicates that plastic lenses would provide a low cost system but "the surface precision of this [plastic] lens is inferior to that obtained by polishing optical glass" (Ishibe, col. 2, line 63 to col. 3, line 13), and only refers to an f- θ lens. Therefore, Ishibe does not teach away from the combination with Mclaughlin in the use of a collimating lens made of glass. Moreover, Ishibe teaches an error correction in the focused light beams on the surface to be scanned largely due to the positional error between the scanning optical system and the scanned surface, and the error correction requires adequate positioning of the different optical components. Such focus error would be minimized with the use of a well designed/manufactured optical system.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER

March 28, 2006